Air Quality Permitting
Statement of Basis

August 26, 2005

Permit to Construct No. P-050005

Treasure Valley Chrome Plating, LLC, Fruitland, Idaho

Facility ID No. 075-00010

Prepared by:

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AIR QUALITY DIVISION

FINAL

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Acronyms, Units, and Chemical Nomenclatures

A	Ampere
AAC	acceptable ambient concentration for non-carcinogens
AACC	acceptable ambient concentration for carcinogens
acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EI	emissions inventory
EPA	U.S. Environmental Protection Agency
gr	grain (1 lb = 7,000 grain)
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
mg	$1x\ 10^{-3}$ gram
MMBtu/hr	million British thermal units per hour
MACT	Maximum Achievable Control Technology
NAAQS	national ambient air quality standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
TVCP	Treasure Valley Chrome Plating, LLC
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Treasure Valley Chromium Plating (TVCP) is an electroplating and polishing facility. Their process primarily involves electroplating chromium, nickel, and copper onto various metals, such as automobile bumpers and wheels, and motorcycle gas tanks and tailpipes.

3. FACILITY / AREA CLASSIFICATION

TVCP is classified as a true minor facility because its potential to emit is less than all major source thresholds. The Aerometric Information Retrieval System (AIRS) classification is "B." The Standard Industrial Classification (SIC) defining the facility is 3471.

The facility is located within Air Quality control Region (AQCR) 63 and Universal Transverse Mercator (UTM) zone 11. The facility is located in Payette County which is designated as unclassifiable for all criteria pollutants.

The AIRS information provided in Section 9 of this statement of basis defines the classification for each regulated air pollutant at TVCP. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

The application is for a new electroplating facility.

4.1 Application Chronology

February 28, 2005	DEQ received a Permit to Construct (PTC) application from TVCP
March 30, 2005	DEQ declared the application incomplete
May 6, 2005	DEQ received a supplement for the PTC application from TVCP
June 2, 2005	DEQ received additional information from TVCP's consultant through e-mail
June 3, 2005	DEQ declared the application complete

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Electroplating Building Natural Gas Heater and Polishing Building Natural Gas Heater

The two natural gas fired heaters are identical. Each heater has a rated heat input rate of 0.175 million British thermal units per hour (MMBtu/hr) or fuel consumption rate of 171.6 standard cubic feet natural gas per hour. Each heater has a stack with a stack height of 20 feet, a stack exit diameter of 10 inches, an exit gas temperature of 350°F, and an exit gas flow rate of 70.1 actual cubic feet per minute (acfm.).

Electroplating Processes in the Electroplating Building

- Chromium electroplating process

  The maximum rated capacity of chromium electroplating process is 5,000 Ampere (A). Fumetrol 140 is used to control the chromium emissions. Per the application, the control efficiency of Fumetrol 140 is 99.81%.

- Nickel electroplating process

  The maximum rated capacity of nickel electroplating process is 5,000 A. No control is used in this process.

- Copper electroplating process

  The maximum rated capacity of nickel electroplating process is 5,000 A. No control is used in this process.

The emissions from the electroplating processes are emitted through the ventilation stack of the electroplating building. The stack has a stack height of 35 feet, a stack exit diameter of four inches, an exit gas flow rate of 1,500 acfm, and an ambient exit gas temperature.

Polishing Operation

The polishing operation begins with sanding machines that sand the product to smooth out the surface that will be electroplated. The particles from the sanding process are large and settle on the floor near the sanding machines. The particles remain in the building and are not released to the atmosphere. Due to this, the sanding machines (polishing operation) are not considered emissions sources.

5.2 Emissions Inventory

A revised emissions inventory (EI), including TAP emissions, was provided on May 6, 2005 and June 2, 2005. The emissions calculations submitted for this PTC were checked by DEQ for the basis of the emissions factors and references and found to be consistent with current DEQ methodology. Therefore, DEQ used the applicant emissions estimates as the basis for the permitting analyses of this project. Information on emissions estimates provided by TVCP can be found in Appendix B of the Statement of Basis. Table 5.2.1 provides an EI summary for criteria pollutants.

Table 5.2.1 EMISSIONS ESTIMATES FOR CRITERIA POLLUTANTS

Emissions units	PM_{10}		SO_2		VOC		NO_X		CO	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Electroplating Process	8.11E-4	3.55E-3	NA	NA	1.50E-2	4.4E-2	NA	NA	NA	NA
Electroplating Building Heater	0.0013	0.0057	0.0001	0.0005	0.0009	0.0041	0.0172	0.0751	0.0144	0.0631
Polishing Building Heater	0.0013	0.0057	0.0001	0.0005	0.0009	0.0041	0.0172	0.0751	0.0144	0.0631
Total		0.015		0.001		0.052		0.150		0.126

Electroplating Building Natural Gas Heater and Polishing Building Natural Gas Heater

The emissions factors (EF) for natural gas fired boiler (AP-42 Section 1.4, rev. 7/98) were used for the natural gas fired heaters because there were no better data available at this time. The hourly emissions rate for each pollutant was calculated by multiplying each heater's natural gas consumption rate, in million cubic feet per hour, by the respective emissions factor. The annual emissions rates were calculated by multiplying hourly emissions rates by 8,760 hours per year and a unit conversion factor of (1 Ton/2000 lb).

Electroplating Processes in the Electroplating Building

- Chromium electroplating process

  EFs for PM_{10} and Chromium VI taken from AP-42, Table 12.20-1 (rev. 7/96) were used for PM_{10} and Chromium VI emissions estimation. Multiplying EFs in grains/A-hr with chromium bath rated capacity of 5,000 A and unit conversion factor of (1 lb/7,000 grain) resulted maximum emissions rates in pounds per hour. The annual emissions rates were estimated by multiplying pounds per hour rate by 8,760 hours per year and unit conversion factor of (1 Ton/2000 lb).

- Nickel electroplating process

  Information on PM_{10} emissions from nickel plating bath is not available. Nickel is assumed to be emitted in PM_{10} form.

  Nickel EF of 0.0327 mg/A-hr or 0.000504 gr/A-hr was taken from a technical document titled "Characterization of Emissions from Nickel Plating" Vol. I, Technical Report, June 21, 1999. This emissions factor was originally reported from the South Coast Air Quality Management District (SCAQMD) in 1996. Multiplying EF in mg/A-hr with nickel bath rated capacity of 5,000 A and unit conversion factor of (2.205×10^{-6} lb/ 1 mg) resulted maximum emissions rate in pounds per hour. The annual emissions rates were estimated by multiplying pounds per hour rate by 5,089 hours per year and unit conversion factor of (1 Ton/2000 lb).

- Copper electroplating process

  Information on PM_{10} emissions from copper plating bath is not available. Copper is assumed to be emitted in PM_{10} form.

  No copper EF from the copper bath was found. It was assumed that the copper EF is the same as nickel EF. Multiplying EF in mg/A-hr with copper bath rated capacity of 5,000 A and unit conversion factor of (2.205×10^{-6} lb/ 1 mg) resulted maximum emissions rate in pounds per hour. The annual emissions rates were estimated by multiplying pounds per hour rate by 8,760 hours per year and unit conversation factor of (1 Ton/2000 lb).

Toxic air pollutant (TAP) Emissions of Miscellaneous Solutions

The TAPs hourly emissions from nickel tank (tank 11), copper strike tank (tank 9), acid tank (tank 5), cleaner tanks (tanks 1 and 3), and strip tanks were estimated by the applicant. The revised TAP emissions calculations were described as the following: "*The revised maximum hourly emission rates were calculated by assuming emissions only occur when sulfuric acid is added to a tank causing fumes. The emissions that escape as fumes are estimated to be 1% maximum of the volume of sulfuric acid that is added to a particular tank; emissions are likely far less then the maximum amount estimated here. Sulfuric acid is added to tanks approximately twice per year. The revised maximum hourly emission rates for sulfuric acid were then compared to their respective emission limits. After sulfuric acid is added to the tanks it remains in aqueous solution and is not emitted to the atmosphere—there is no misting or fumes. Emission rates for hydrogen chloride, hydrogen peroxide and phosphoric acid were also recalculated using the same assumptions as for sulfuric acid.*

The following toxic chemicals are solids and are assumed to have negligible emissions: sodium hydroxide, cristobalite, quartz and potassium hydroxide. In addition sodium hydroxide and potassium hydroxide become ionized and would not be emitted as a toxic air pollutant.

EGME is a chemical in Aluminum Brightener which is stored in drums to pretreat products to be plated. The Aluminum Brightener is a thick syrupy solution and is expected to have no emissions."

The detailed calculations can be found in June 2, 2005 submittal.

5.3 Modeling

The facility has demonstrated compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The detailed modeling analysis is included in Appendix A. Emissions of all criteria air pollutants are below the applicable modeling thresholds. Table 5.2.1 is the summary of TAPs modeling analysis.

Table 5.2.1 FULL IMPACT ANALYSIS RESULTS FOR TAPS

Pollutant	Average period	Concentration ($\mu g/m^3$)	Regulatory Limit ($\mu g/m^3$)	Percent of Limit
Carcinogens				Percent of AACC
Nickel	24-hour	3.96E-3	4.20E-3	94.3%
Non-Carcinogens				Percent of AAC
Hydrogen Chloride	Annual	46.1	50	92.2%
Sulfuric Acid	Annual	15.4	67	22.9%
Phosphoric Acid	Annual	60.9	67	91.0%
Hydrogen Peroxide	Annual	56.5	100	56.5%

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

TVCP is proposing to construct a new electroplating and polishing plant. The proposed project does not qualify for an exemption under Sections 220 through 223 of the Rules; therefore, a Permit to Construction is required.

IDAPA 58.01.01.203.02 ..... NAAQS

"No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:....02. NAAQS...."

The facility has demonstrated compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. Emissions of all criteria air pollutants are below the applicable modeling thresholds. The detailed modeling analysis is included in Appendix A.

IDAPA 58.01.01.203.03 ..... Toxic Air Pollutants

"No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:....03. Toxic Air Pollutants Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586."

The emissions of nickel, hydrogen chloride, sulfuric acid, phosphoric acid, and hydrogen peroxide exceeded their respective screen emissions levels. Emissions of hydrogen chloride, sulfuric acid, phosphoric acid, and hydrogen peroxide were modeled, and the modeled ambient concentrations were less than their respective acceptable ambient concentrations (AAC).

The emissions of nickel exceeded its screen emissions level. By taking the limit on nickel electroplating tank annual emissions limit and its corresponding operation hours, 5,089 hours per year, the controlled nickel emissions were modeled and met the nickel acceptable ambient concentrations (AACC).

Because the facility is subject to 40 CFR 63 Subpart N (MACT), in accordance with IDAPA 58.01.01.210.20, no further procedures for demonstrating preconstruction compliance will be required for chromium. As long as the facility complies with MACT standards, the facility complies with Section 210 of the Rules

Therefore, the facility has demonstrated preconstruction compliance with toxic standards in accordance with IDAPA 58.01.01.210.

IDAPA 58.01.01.625 ..... Visible Emissions

This regulation states that any point of emission shall not have a discharge of any air pollutant for a period aggregating more than three minutes in any 60-minute period of greater than 20% opacity.

The emissions points at this facility are subject to this regulation.

IDAPA 58.01.01 675 ..... Fuel Burning Equipment

This regulation establishes particulate matter emission standards (grain loading standards) for fuel burning equipment. Fuel burning equipment is defined in IDAPA 58.01.01.006.41 as, *"Any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer."*

This regulation is applicable to the natural gas-fired heaters. The calculated results in the application demonstrate that the heaters were in compliance with the grain loading standard.

40 CFR 60 ..... New Source Performance Standards

This facility is not subject to New Source Performance Standards.

40 CFR 63 Subpart N ..... National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks

In accordance with 40 CFR 63.340(a), the affected source to which 40 CFR 63 Subpart N apply is each chromium electroplating or chromium anodizing tank at facilities performing hard chromium electroplating, decorative chromium electroplating, or chromium anodizing. TVCP consists of a chromium electroplating tank(s) performing decorative chromium electroplating. Therefore, TVCP's chroming electroplating tank is subject to 40 CFR 63 Subpart N.

In accordance with 40 CFR 63.340(c), process tanks associated with a chromium electroplating or chromium anodizing process, but in which neither chromium electroplating nor chromium anodizing is taking place, are not subject to the provisions of this subpart. Examples of such tanks include, but are not limited to, rinse tanks, etching tanks, and cleaning tanks. Likewise, tanks that contain a chromium solution, but in which no electrolytic process occurs, are not subject to this subpart. An example of such a tank is a chrome conversion coating tank where no electrical current is applied.

5.5 Fee Review

DEQ received TVCP's $1,000 PTC application fee on February 28, 2005, which was required in accordance with IDAPA 58.01.01.224. TVCP's emissions increase is between one to 10 tons range. In accordance with IDAPA 58.01.01.225, the PTC processing fee is $2,500. TVCP paid the PTC processing fee on August 25, 2005.

Table 5.2 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0.150	0	0.150
SO_2	0.001	0	0.001
CO	0.126	0	0.126
PM_{10}	0.015	0	0.015
VOC	0.052	0	0.052
TAPS/HAPS	0.80	0	0.80
Total:	1.15	0	1.15
Fee Due	**$ 2 ,500.00**		

5.6 Regional Review of Draft Permit

The draft permit was made available for Boise Regional Office review on July 8, 2005. The comments were received on July 13, 2005. They were addressed in the permit.

5.7 Facility Review of Draft Permit

The draft permit was provided for facility review on August 5, 2005. The facility has no comments on the draft permit.

6. PERMIT CONDITIONS

The following permit conditions describe the requirements of a new PTC.

6.1.1 20% opacity limit is included in the permit. DEQ doesn't foresee the possibility of exceeding opacity limit. Thus, there is no specific monitoring requirement for this limit.

6.1.2 The nickel emissions from the nickel electroplating tank, ultimately electroplating building stack is limited to 1.83 pounds per year in the permit. The corresponding operation hours of nickel electroplating tank is limited to 5,089 hours per any consecutive 12-month. These limits are established for demonstrating preconstruction compliance with nickel increment, in other words, to meet nickel AACC increment. They are included in the permit. The corresponding monitoring, recordkeeping, and reporting requirements are also included in the permit.

6.1.3 TVCP chose to use the surface tension limit under 40 CFR 63.342(d)(2) to demonstrate compliance with MACT standard for their chromium electroplating tank. This limit is included in the permit. All operating, monitoring, recordkeeping, and reporting requirements in 40 CFR 63 applying to TVCP's chromium electroplating tank are included in the permit, including 40 CFR 63 Appendix A Test Method 306B —Surface Tension Measurement for Tanks Used at Decorative Chromium Electroplating and Chromium Anodizing Facilities.

6.1.4 Grain loading standard for the natural gas heaters is included in the permit. The heaters are in compliance with the limit. Therefore, there is no specific monitoring requirement for this limit.

6.1.5 TVCP is required to submit Title V application by December 9, 2005 in accordance with 40 CFR 63.340(e)(2). This requirement is included in the permit.

6.1.6 DEQ has the delegation of 40 CFR 63 Subpart N. Therefore, "EPA administrator" is replaced with "DEQ" throughout the permit for 40 CFR 63 Subpart N requirements.

7. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were not comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that TVCP be issued a final PTC No. P-050005 for the new electroplating facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

9. AIRS

Table 9.1 AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

AIR PROGRAM / POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
SO_2	B					B	U
NO_X	B					B	U
CO	B					B	U
PM_{10}	B					B	U
PT (Particulate)	B						
VOC	B					B	U
THAP (Total HAPs)	B				N (Chromium)		
			APPLICABLE SUBPART				

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

SYC/sd Permit No. P-050005

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APPENDIX A

Modeling Review

Permit to Construct No. P-050005

Treasure Valley Chrome Plating, LLC, Fruitland, Idaho

Facility ID No. 075-00010

MEMORANDUM

DATE: August 10, 2005

TO: Shawnee Chen, Air Quality Division

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator, Air Quality Division

FROM: Dustin Holloway, Modeling Analyst, Air Quality Division

PROJECT NUMBER: P-050005

SUBJECT: Modeling Review for the Treasure Valley Chrome Plating facility in Fruitland

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1.0 SUMMARY

Treasure Valley Chrome Plating (TVCP) submitted ambient air quality dispersion modeling in support of a permit to construct for a new chrome plating facility to be located in Fruitland, Idaho. Emissions of all criteria air pollutants are below the applicable modeling thresholds. Toxic air pollutants (TAPS) emitted by this facility in amounts which exceed the applicable screening emissions levels (EL) were modeled. The following table summarizes the key assumptions used in the analysis which should be considered in permit development.

Table 1.1 KEY ASSUMPTIONS USED IN MODELING ANALYSIS

Assumption	Explanation
The nickel bath will only be operated for 5,089 hours per year.	The modeling analysis used this assumption to demonstrate that the nickel emissions would not exceed the allowable ambient concentrations for nickel.

Based on the results of the applicant's and DEQ's analyses, DEQ has determined that the modeling analysis: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) appropriately adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that the increase in toxic air pollutant concentrations are within the applicable allowable concentrations in IDAPA 58.01.01.585-586.

2.0 BACKGROUND INFORMATION

2.1 Applicable Air Quality Impact Limits

TVCP is located in Fruitland, in Payette county. Payette county is designated attainment or unclassifiable for all criteria air pollutants. Table 2.1 provides allowable TAP increments.

Table 2.1 APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Regulatory Limit ($\mu g/m^3$)[a,b]	Modeled Value Used[c]
Nickel	Annual	4.2E-04	Maximum 1st highest[d]
Hydrogen Chloride	24-hour	50	Maximum 1st highest[d]
Sulfuric Acid	24-hour	375	Maximum 1st highest[d]

[a] Micrograms per cubic meter
[b] IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.
[c] The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants.
[d] Concentration at any modeled receptor.

2.2 *Background Concentrations*

Background concentrations are not used for TAP analyses.

3.0 ASSESSMENT OF MODELING ANALYSIS

3.1 *Modeling Methodology*

JBR Environmental Consultants Inc, TVCP's consultant, performed the modeling analysis. The analysis submitted with the application was performed with ISCPRIME. DEQ requested additional information during the permitting process and TVCP submitted additional modeling performed with Screen3. The Screen3 output results could not be duplicated by DEQ, and it appears that downwash was not calculated. During the modeling review DEQ inserted the additional modeling information into the original ISCPRIME model to verify that the emissions of the additional TAPs would not exceed allowable concentrations. Additionally, DEQ requested justification for the electroplating building vent stack exit velocity. The updated application materials did not contain justification for the high exit velocity. Therefore, DEQ reduced the exit velocity in the analysis from 87 m/s to 45 m/s. DEQ ran verification modeling with the original submission and found that the meteorological data was incorrectly entered in the model. The submitted analysis used five years of meteorological data in one file. ISC does not calculate one year averages with this type of file. The annual output when a single five year file is used is actually the average over five years. DEQ reran the model with five one year meteorological files. The resulting nickel concentration exceeded the AACC. The applicant requested a limit of 5,089 hours of operation per year on the nickel bath. DEQ ran the model assuming that the nickel emissions would be limited to 5,089 hours per year and found that the annual allowable concentration for nickel would not be exceeded. The sulfuric acid emissions rate used in the Screen3 analysis did not meet the AAC when included in the ISCPRIME model. Upon further review, DEQ determined that sulfuric acid is only emitted when added to the plating tanks. The application states that acid is only added once or twice per year. DEQ averaged the maximum hourly emissions over a 24 hour period and ran the model. The resulting concentration is within the applicable AAC.

Table 3.1 MODELING PARAMETERS

Parameter	Used in Analysis	DEQ's Review/Determination
Modeling protocol	No modeling protocol was submitted	Although no protocol was submitted, the applicant submitted enough information for DEQ to determine that the facility would not exceed any ambient air quality standards.
Model Selection	ISCPRIME	ISCPrime is an appropriate dispersion model for this facility.
Meteorological Data	1987-1991 Boise meteorological data.	This is the most representative data available for this area.
Model Options	Regulatory default	This is the recommended setting for regulatory dispersion modeling.
Land Use	Rural	The land use surrounding this facility is primarily rural. The analysis uses rural dispersion coefficients.
Terrain	The effects of terrain on dispersion were calculated.	Receptor elevations were included in the submitted analysis and the model was run to account for the effects of both simple and complex terrain.
Building Downwash	Downwash effects were calculated	Building dimensions were included in the original analysis and the model was run to calculate downwash effects. The PRIME algorithm calculates concentrations in both building wakes and building recirculation cavities.
Receptor Network	25 meter spacing out to 100 meters; 50 meter spacing out to 300 meters; 100 meter spacing out to 1,000 meters; 250 meter spacing out to 3,000 meters	The receptor grid is sufficient to reasonably resolve the maximum concentrations.
Facility Layout	Building dimensions and stack parameters were included in the analysis.	The facility layout was verified by comparing it to the submitted plot plan and aerial photographs.

3.2 Emission Rates

The following table summarizes the emissions rates used in the analysis.

Table 3.2 MODELED EMISSION RATES

Source ID	Source Description	Nickel[a]	Hydrogen Chloride	Sulfuric Acid[b]	Phosphoric Acid	Hydrogen Peroxide
POLHTR	Polishing Building Space Heater	4.55E-08	0.0	0.0	0.0	0.0
ELTRPHTR	Electroplating Building Space Heater	4.55E-08	0.0	0.0	0.0	0.0
VENTSTK	Electroplating Building Vent Stack	2.09E-04	0.84	0.28	1.11	1.03

[a] Hourly rate averaged over one year.
[b] Hourly rate averaged over 24 hours.

3.3 Emission Release Parameters

The following table summarizes the emission release parameters used in the analysis.

Table 3.3 EMISSION RELEASE PARAMETERS

Source ID	Easting (m)	Northing (m)	Elevation (m)	Stack Height (ft)	Exhaust Temperature (°F)	Exit Velocity (m/s)	Stack Diameter (ft)
POLHTR	506,792.6	4,872,963.5	677.3	20	350	0.653	0.83
ELTRPHTR	506,779.0	4,872,985.5	677.3	20	350	0.653	0.83
VENTSTK	506,759.8	4,872,983.5	677.3	35	70	45	0.33

3.4 Results

Table 3.4 summarizes the results of the TAP analysis. The results demonstrate, to DEQ's satisfaction, that the facility will not cause an exceedance of any allowable ambient concentrations for TAPs in IDAPA 58.01.01.585-586.

Table 3.4 TAP ANALYSIS RESULTS

Carcinogens	**Ambient Impact (µg/m3)**	**AACC (µg/m3)**	**Percent of AACC**
Nickel	3.96E-03	4.20E-03	94.3%
Non-Carcinogens	**Ambient Impact (µg/m3)**	**AACC (µg/m3)**	**Percent of AAC**
Hydrogen Chloride	46.1	50	92.2%
Sulfuric Acid	15.4	67	22.9%
Phosphoric Acid	60.9	67	91.0%
Hydrogen Peroxide	56.5	100	56.5%

APPENDIX B

Emissions Inventory from TVCP

Permit to Construct No. P-050005

Treasure Valley Chrome Plating, LLC, Fruitland, Idaho

Facility ID No. 075-00010

TOXIC AIR POLLUTANT EMISSION INVENTORY - FACILITY WIDE

NON-CARCINOGENS

Pollutant	Max Hourly Emissions (lb/hr)	Screening Level (lb/hr)	Modeling? (Y/N)	Emissions (tons/yr)
Antimony	0.00E+00	3.3E-02	No	0.0E+00
Barium	1.51E-06	3.3E-02	No	6.6E-06
Chromium	4.80E-07	3.3E-02	No	2.1E-06
Cobalt	2.88E-08	3.3E-03	No	1.3E-07
Copper	3.60E-04	6.7E-02	No	1.6E-03
Cristobalite	2.28E-03	3.3E-03	No	2.5E-02
Ethylbenzene	0.00E+00	2.9E+01	No	0.0E+00
Fluoride	0.00E+00	1.67E-01	No	0.0E+00
Hexane	6.18E-04	1.2E+01	No	2.7E-03
Hydrogen Chloride	8.43E-01	5.0E-02	Yes	8.4E-02
Hydrogen Peroxide	1.03E+00	1.0E-01	Yes	1.0E-01
Manganese	1.30E-07	3.33E-01	No	5.7E-07
Mercury	8.92E-08	3.E-03	No	3.9E-07
2-Methoxyethanol (EGME)	1.50E-02	1.E+00	No	4.4E-02
Molybdenum	3.77E-07	6.67E-01	No	1.7E-06
Naphthalene	2.09E-07	3.33E+00	No	9.2E-07
Pentane	8.92E-04	1.18E+02	No	3.9E-03
Phosphoric Acid	1.11E+00	6.70E-02	Yes	1.1E-01
Phosphorous	0.00E+00	7.0.E-03	No	0.0E+00
Potassium Hydroxide	7.08E-03	1.3.E-01	No	1.9E-01
Quartz	2.28E-04	6.7.E-03	No	2.5E-02
Selenium	8.24E-09	1.3E-02	No	3.6E-08
Sodium Hydroxide	2.80E-02	1.3E-01	No	2.0E-01
Sulfuric Acid	6.68E+00	6.7E-02	Yes	~~2.9E+01~~
1,1,1 - Trichlorethane (Methyl Chloroform)	0.00E+00	1.3E+02	No	0.0E+00
Toluene	1.17E-06	2.5E+01	No	5.1E-06
o-Xylene	0.00E+00	2.9E+01	No	0.0E+00
Vanadium	7.89E-07	3.0E-03	No	3.5E-06
Zinc	9.95E-06	6.67E-01	No	4.4E-05

correction for H_2SO_4:
$\frac{6.68\ lb}{hr} \mid \frac{2\ times}{Yr} \mid \frac{1\ hr}{once}$
$\frac{Ton}{2,000\ lb} = 0.0077\ T/yr$

This is based on information provided by TVCP consultant via e-mail on June 2, 2005

CARCINOGENS

Pollutant	Max. Hourly Emissions (lb/hr)	Screening Level (lb/hr)	Modeling? (Y/N)	Emissions (tons/yr)
Arsenic	6.86E-08	1.5E-06	No	3.01E-07
Benzene	7.21E-07	8.0E-04	No	3.16E-06
Beryllium	4.12E-09	2.8E-05	No	1.80E-08
Cadmium	3.77E-07	3.7E-06	No	1.65E-06
Chromium VI	4.36E-05	5.6E-07	Yes	4.54E-05
Formaldehyde	2.57E-05	5.1E-04	No	1.13E-04
Nickel	3.61E-04	2.7E-05	Yes	1.58E-03
Benzo(a)pyrene	4.12E-10	2.0E-06	No	1.80E-09
Benz(a)anthracene	6.18E-10	NA	NA	2.71E-09
Benzo(b)fluoranthene	6.18E-10	NA	NA	2.71E-09
Benzo(k)fluoranthene	6.18E-10	NA	NA	2.71E-09
Chrysene	6.18E-10	NA	NA	2.71E-09
Dibenzo(a,h)anthracene	4.12E-10	NA	NA	1.80E-09
Indeno(1,2,3-cd)pyrene	6.18E-10	NA	NA	2.71E-09
Total PAHs	3.91E-09	2.00E-06	No	1.71E-08

Uncontrolled PM10 Emissions from Electroplating Process

	PM EF (grains/A-hr)	Power (A)	PM10 Emissions (grains/hr)	PM10 Emissions (lb/hr)	PM10 Emissions (T/yr)
Chromium VI Bath[a]	0.069	5000	345	4.93E-02	2.16E-01
Nickel Bath[b]	0.000504	5000	2.52	3.60E-04	1.58E-03
Copper Bath[b]	0.000504	5000	2.52	3.60E-04	1.58E-03
		TOTAL =	**350.04**	**5.00E-02**	**2.19E-01**

[a] PM EF from AP-42, Table 12.20-1 Chromium Electroplating, July 1996

[b] PM EF assumed to be 2 times Cr+6 EF

Controlled PM10 Emissions from Electroplating Process

	PM EF (grains/A-hr)	Power (A)	Control Efficiency (%)	PM10 Emissions (grains/hr)	PM10 Emissions (lb/hr)	PM10 Emissions (T/yr)
Chromium VI Bath[a]	0.069	5000	99.815%	6.38E-01	9.12E-05	9.48E-05
Nickel Bath[b]	0.000504	5000	0.000%	2.52E+00	3.60E-04	1.58E-03
Copper Bath[b]	0.000504	5000	0.000%	2.52E+00	3.60E-04	1.58E-03
			TOTAL =	**5.68E+00**	**8.11E-04**	**3.25E-03**

[a] PM EF from AP-42, Table 12.20-1 Chromium Electroplating, July 1996

[b] PM EF assumed to be 2 times Cr+6 EF

CRITERIA EMISSIONS - NATURAL GAS COMBUSTION - TVCP

Emission Factors

NOx	100 lb/10^6 scf	AP-42, Table 1.4-1, 1998
CO	84 lb/10^6 scf	AP-42, Table 1.4-1, 1998
PM-10	7.6 lb/10^6 scf	AP-42, Table 1.4-2, 1998
SOx	0.6 lb/10^6 scf	AP-42, Table 1.4-2, 1998
VOC	5.5 lb/10^6 scf	AP-42, Table 1.4-2, 1998
Lead	0.0005 lb/10^6 scf	AP-42, Table 1.4-2, 1998

			Pounds per Hour					
Description	Capacity (MMBtu/hr)	Throughput (scf/hr)	NOx Emissions (lb/hr)	CO Emissions (lb/hr)	PM-10 Emissions (lb/hr)	SOx Emissions (lb/hr)	VOC Emissions (lb/hr)	Lead Emissions (lb/hr)
Electroplating Building Heater	0.175	171.6	0.0172	0.0144	0.0013	0.0001	0.0009	0.0000001
Polishing Building Heater	0.175	171.6	0.0172	0.0144	0.0013	0.0001	0.0009	0.0000001
TOTAL	3.5E-01	3.4E+02	3.43E-02	2.88E-02	2.61E-03	2.06E-04	1.89E-03	1.72E-07

			Tons per Year					
Description	Capacity (MMBtu/hr)	Throughput (scf/yr)	NOx Emissions (T/yr)	CO Emissions (T/yr)	PM-10 Emissions (T/yr)	SOx Emissions (T/yr)	VOC Emissions (T/yr)	Lead Emissions (T/yr)
Electroplating Building Heater	0.175	751.5	0.0751	0.0631	0.0057	0.0005	0.0041	0.0000004
Polishing Building Heater	0.175	751.5	0.0751	0.0631	0.0057	0.0005	0.0041	0.0000004
TOTAL	3.5E-01	1.5E+03	1.50E-01	1.26E-01	1.14E-02	9.02E-04	8.27E-03	7.51E-07